(CS30217)

B.Tech. DEGREE (Regular) EXAMINATION,
DECEMBER 2019.

Second Year – First Semester

Computer Science and Engineering

Paper – II – DISCRETE MATHEMATICAL STRUCTURES

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

UNIT I

1. (a) Show that $\sim(p \vee q)$ and $\sim p \wedge \sim q$ an logically equivalent.

(b) Let $f: N \to N$ and $g: N \to N$ be two functions, defined by $f(x) = zx + 10$ and $g(x) = 3x + 5$. Then find the values of $(fog)(x) and\ (gof)x$

Or

(c) Give a proof by contradiction of the theorem "if $3x + 2$ is odd then n is odd".

(d) Negate the following statements.

(i) Ottawa is a small town.

(ii) Every city in Canada is clean.

UNIT II

2. (a) Use mathematical induction, prove that $1 + 2^3 + 3^3 + \cdots + n^3 = \left[\frac{n(n+1)}{2}\right]^2$

(b) What is the coefficient of $x^{12}y^{13}$ in the expansion of $(2x+3y)^{25}$.

Or

(c) State and prove Pigeon Hole principle.

(d) How many solutions does the equation $x_1 + x_2 + x_3 = 11$ have, where x_1, x_2 and x_3 are non negative integers?

UNIT III

3. (a) Find all solution of the recurrence relation $a_n = 6a_{n-1} - 11a_{n-2} + 6a_{n-3}, a_0 = 2,$ $a_1 = 5, a_2 = 15.$

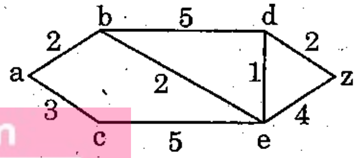
(b) How many positive integers not exceeding 1000 are divisible by 7 or 11?

Or

(c) Given $S = \{1,2,3,4\}$ and a relation R on S defined by $R = \{(1,2),(4,3),(2,2),(2,1),(3,1)\}$, Show that R is not transitive. Find a relation $R_1 \supseteq R$ such that R_1 is transitive. Can you find another relation $R_2 \supseteq R$ which is also transitive?

UNIT IV

4. (a) Using Dijktra's algorithm, find the shortest form a to z in the following graph.



(b) State and prove Euler's theorem in planar graph.

Or

(c) Define Kruskal's and Prim's algorithms with examples.

UNIT V

5. (a) Show that in a complete binary tree the total number of edges is given by $z(n_i - 1)$, Where n_i is the number of terminal nodes.

Or

(b) Find the sum of product expression for the Boolean function $F(x,y,z) = (x+y)\overline{z}.$

(c) Describe the Prim's algorithm for finding the minimum spanning tree of a graph.

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B.Tech. DEGREE EXAMINATIONS,
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First Semester

Computer Science and Engineering

Paper III – COMPUTER ORGANIZATION

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each unit.
All questions carry equal marks.

UNIT I

1. (a) Design a 4 bit synchronous counter using J-K flip flops.

(b) Construct a 16 to 1 line MUX with two 8 to 1 line MUX and one 2 to 1 line MUX.

Or

(c) Explain in detail about the floating - point representation.

(d) Discuss the operation of SR flip - flop with logic diagram.

UNIT II

2. (a) Explain and figure out the control unit of basic computer.

(b) What are the necessary hardware components required to design a computer? Explain.

Or

(c) Discuss about the register transfer language and Gas and memory transfer.

UNIT III

3. (a) What an the major components of CPU? Explain the Register Organization with a block diagram.

(b) What is virtual memory? With a diagram explain how virtual memory analysis is translated.

Or

(c) Explain different addressing modes with an example.

(d) What is a control unit? Explain control memory with a black diagram.

UNIT IV

4. (a) What are the three ways of adding decimal memory? Explain with figures.

(b) Explain the parallel priority interrupt.

Or

(c) Explain signed addition, signed subtraction with signed - z's complement data.

(d) Explain Arithmetic operations on floating point memory.

UNIT V

5. (a) Explain with an example program controlled I/O operation.

Or

(b) Explain the terms

(i) Interrupt routine

(ii) Interrupt tendency

(iii) Interrupt disabling.

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B.Tech. DEGREE (Regular) EXAMINATIONS,
DECEMBER 2019.

Second Year – First Semester

Computer Science and Engineering

Paper IV – COMPUTER NETWORKS

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each unit.
All questions carry equal marks.

UNIT I

1. (a) Explain in detail about ISO OSI reference model architecture with neat diagram.

Or

(b) Explain different types of transmission media.

(c) Write about data link layer design issues.

UNIT II

2. (a) Explain in detail about binary exponential back of algorithm.

(b) Explain the four basic network topologies with relevant features.

Or

(c) Write about Bluetooth applications.

(d) Write a short note on spanning tree bridge.

UNIT III

3. (a) Discuss in detail about various issues of Network Layer.

Or

(b) Write in detail any two routing algorithms. .

(c) Explain in detail about exterior Gateway Routing protocol.

UNIT IV

4. (a) Explain in detail about the duties of Transport Layer.

Or

(b) Discuss about the UDP in detail.

UNIT V

5. (a) Explain the architecture and service of E-mail.

Or

(b) Explain the architecture of world wide web.


www.kvrssgroup.com
www.kvrssgroup.com
www.upiqpbank.com
www.upiqpbank.com
KVRSS GROUP
KVRSS GROUP

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B.Tech. DEGREE EXAMINATION, DECEMBER 2019.

Second Year – First Semester

Computer Science and Engineering

Paper V – OBJECT ORIENTED ANALYSIS AND DESIGN

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each unit.
All questions carry equal marks.

UNIT I

1. (a) What is object oriented analysis and design. Explain the models of it briefly with an example.

(b) Draw a use case diagram for library management system.

Or

(c) What are different approaches for identifying analysis classes? Discuss in detail along with examples.

(d) What are fact finding technique? Explain.

UNIT II

2. (a) Draw and explain class diagram and assembling the analysis of class diagram.

Or

(b) What is a sequence diagram? Explain sequence diagram and collaboration diagrams.

UNIT III

3. (a) What is role of operation specifications? Explain the role of operation specifications and how to create an operation specifications.

Or

(b) What is Status, events and basic notations? Explain the status, events and basic notations. And also explain static chart with an example.

UNIT IV

4. (a) What is system design? How is design different from analysis? Explain.

(b) Explain qualities and objectives of analysis and design.

Or

(c) Explain structural, Ethnographic and scenario based approach for UI diagram.

(d) What is object design? Which criteria for good design?

UNIT V

5. (a) Explain the software implementation phase in detail.

Or

(b) Explain distinguishing for object database management systems in detail.

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B.Tech. DEGREE EXAMINATIONS,
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Second Year– First Semester

Computer Science and Engineering

Paper – VI :DESIGN AND ANALYSIS OF ALGORITHMS

(Regulation 2017-18)

Time : Three hours Maximum : 70 marks

Answer ONE question from each unit.
All questions carry equal marks.

UNIT I

1. (a) What is divide and conquer? Write the control abstraction for divide and conquer.

(b) Write the algorithm for merge sort and explain with examples.

Or

(c) Design an algorithm for finding maximum number from a list of elements and illustrate with an example.

(d) Explain how to analyze the algorithm.

UNIT II

2. (a) Explain prims method of obtaining the minimum spanning tree using example.

(b) Consider tghe Knapsack instance n=5, m=12, $(P_1,P_2,P_3,P_4,P_5) = (10,15,6,8,4)$, $(W_1, W_2, W_3, W_4, W_5) = (4,6,3,4,2)$. Find the optimal solution using greedy method.

Or

(c) Explain large integer multiplication using divide and conquer.

UNIT III

3. (a) Explain the travelling salesman problem in detail and how the dynamic programming is applied on this problem.

Or

(b) Explain dynamic programming technique for construction of optimal binary search trees with the help of an example.

UNIT IV

4. (a) State and explain the graph coloring problem using backtracking with an example and write an algorithm.

Or

(b) Explain the terms Least Cost (LC) search, FIFO Branch-and-Bound, and LC Branch-and-bound.

UNIT V

5. (a) Explain about Non-deterministic algorithms and describe the time complexity.

Or

(b) Explain about NP - Hard graph problems.